

# **T.A.E. - The Last Great Journey of Antarctic Exploration**

**‘Before the Tractors Rolled’**

**Being an account of the steps leading up to the first crossing  
of the continent of Antarctica**

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## OUTLINE

The paper begins with a brief outline of exploration and Polar exploration in particular. It bridges from Ernest Shackleton's attempt to cross Antarctica with his 'Endurance' expedition of 1914-1917, to the time almost 40 years later, when the idea was taken up again by the British scientist, Vivian Fuchs. A brief background on Fuchs then sets the scene from when he first raises the idea, nurtures it along and, still under the guidance of his University of Cambridge mentor James Wordie, carries it through the political maze, to the attainment of UK government approval.

The story then brings the introduction of New Zealand into the piece, beginning with the catalytic meeting between Fuchs and Sir Edmund Hillary in late 1953, and recounts the obtaining of approval and support from the New Zealand government, which culminated with the establishment of the Ross Sea Committee.

The paper describes the planning aspects of the Trans-Antarctic Expedition or TAE, and covers Fuchs' decision regarding the location of his departure base (Shackleton Base).

It also covers the uncertain process for selecting both the site for the reception base (Scott Base) as well as for determining the best route from Ross Island onto the Antarctic Plateau. The significant contribution made to the crossing effort by the Americans, Capt. Finn Ronne and Admiral George Dufek of the US Navy, is also touched on. I have attempted to place all of the above in the political and social context of the day.

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To Peter Fuchs, a GCAS alumni, whose father, Sir Vivian Fuchs, was the first man to cross Antarctica over land, and whose generous and insightful response to my queries confirmed the aim of this project, I extend my heartfelt thanks.

I also wish to give special thanks to George and Mary Lowe who received Glynis and I so graciously at their home in Diamond Harbour. George's inspiration greatly boosted my flagging energies.

To Wing Commander (Ret.) John Claydon, I offer my deepest gratitude. Without John's encouragement and patience over the past two years I could never have travelled this far on my own journey of Antarctic discovery.

Lastly, to my dear friend and wife, Glynis, whose constant support kept me going through the late nights, I can only say that I am truly blessed to have such an understanding partner in life.

## PREFACE

“ It may have been about our year 750 that the astonishing Hui-te-Rangiora, in his canoe Te Iwi-o-Atea, sailed from Rarotonga on a voyage of wonders in that direction (South): he saw the bare white rocks that towered into the sky from out the monstrous seas, the long tresses of the woman that dwelt therein, which waved about under the waters and on their surface, the frozen sea covered with pia or arrowroot, the deceitful animal that dived to great depths – ‘a foggy, misty dark place not shone on by the sun’. Icebergs, the fifty foot long leaves of the bull-kelp, the walrus or sea-elephant, the snowy ice fields of a clime very different from Hui-te-Rangiora’s own warm islands – all these he had seen”<sup>1</sup>

Over the past two years as I read more about the Antarctic, I have become interested in the decade of the 1950’s and in the Trans-Antarctic Expedition in particular. I consider the Expedition to have been the single event that caused New Zealand to move from disinterested nation, reluctantly carrying a responsibility given to it by its Commonwealth elder, to become a major player in the Antarctic today. In reading the various accounts of the Expedition it appeared to me that in no one place did I find all the interesting and often important pieces of the story. This paper is my attempt to bring those pieces together and to shed a bit more light on one of the great achievements of the twentieth century.

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<sup>1</sup> Beaglehole, ‘The Discovery of New Zealand’, p. 3

## INTRODUCTION

Throughout the ages mankind has been tempted and challenged by the unknown. This was true of the Phoenicians 3000 years ago as it was true of Marco Polo in the thirteenth century and of the sailor-navigators of more recent times.<sup>2</sup> In some cases the lure has been commercial gain, and in others, territorial expansion or even spiritual conversion. In many instances, these objectives have been closely intertwined.

With the ascendance of science in the nineteenth century intellectual motives came to the fore. Curiosity was aroused about the workings of nature and became for many the driving force of their travels.

The voyage of the British ship *HMS Challenger* in the 1870's exemplifies well the importance that knowledge of earth's natural systems began to assume.<sup>3</sup> It was during this period that a new breed of traveller emerged - the explorer-adventurer.

Africa, the 'dark continent', had become the world stage for the most dramatic of these geographic escapades. Finding the 'source of the Nile' offered its discoverer the promise of everlasting fame, if not fortune. People such as Speke and Burton, Livingstone and Stanley, were hailed as celebrities of the day. Their lectures and accounts of their travels and adventures were assured sell-out events.<sup>4</sup>

The announcement of a new 'Expedition' sent vibrations of excitement rippling through the community. Here was opportunity to break out of the hum-drum of local pastoral life. A young man's imagination was fired and off he went to seek 'fame and fortune' – to seek his destiny.

In addition to the jungles, the mountains, the oceans and the deserts there remained another far more daunting prospect for the explorer-adventurer – Antarctica.

Antarctica, the mighty frozen continent lying in the midst of the Southern Ocean and covering the lowest latitudes, had so far avoided the footfall of *homo sapiens*. Even though six hundred years had passed since Marco Polo had completed his travels across Asia, it was not until approaching the 20<sup>th</sup> century that Antarctica first bore the weight of the most curious of Earth's inhabitants.

This occurred with the Norwegian sealing and whaling expedition of Henrik Johan Bull when his party, which included a seaman named Carsten Borchgrevink, stepped onto the western shore of the Ross Sea at Cape Adare. The year was 1895.

Many voyages, several aimed at reaching the South Pole, by people such as Borchgrevink, Capt Robert Falcon Scott, Roald Amundsen, Douglas Mawson and Shackleton occupied the next decade until Scott's tragic death with his companions on their bitter return trek from the Pole. It was now 1912 and further designs on Antarctica were brewing in England.<sup>5</sup>

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<sup>2</sup> Toynbee, Arnold, 'Mankind and Mother Earth'

<sup>3</sup> Linklater, The Voyage of the Challenger

<sup>4</sup> Cameron, Ian, The History of the Royal Geographic Society 1830-1980

<sup>5</sup> Reader's Digest, Antarctica

In 1908, Dr. William S. Bruce, leader of the Scottish National Antarctic Expedition (1902-1904), announced his project to cross the Antarctic continent. He had previously visited the Weddell Sea and chose to begin his crossing from that area. However, even though he was a prominent scientist and experienced polar explorer he was unsuccessful in raising funds and his project never reached fruition.<sup>6</sup>

In 1909, Dr. Wilhelm Filchner, the noted German explorer, embarked on a similar project. In this case his party fell victim to the cruel ice of the Weddell Sea. After spending nine months beset over winter in his ship the *Deutschland*, Filchner and his party finally escaped, never to return to Antarctica.<sup>7</sup>

Even Scott had considered the idea and thought to cross in the opposite direction, starting from the Ross Sea. After these stillborn attempts, the Antarctic stage was left to the charismatic Shackleton.

In 1914, Shackleton started out on his great adventure with the *Endurance* expedition. As both Amundsen and Scott had reached the South Pole in 1911 and 1912 respectively, his new goal was to cross the continent of Antarctica itself. This first trans-Antarctic expedition, which elapsed over a period of almost three years, was marked for failure in its early stages with the sinking of the *Endurance*, crushed without mercy by the Weddell Sea ice pack. In retrospect, some would argue that the outcome was the best possible, the challenge being possibly too great even for a man of Shackleton's considerable ability and experience. Antarctica's defences had prevailed.<sup>8</sup>

In 1932, a young Englishman by the name of Gino Watkins who had been with the British Arctic Air Route Expedition in Greenland announced his intention to cross Antarctica. His plan was to cross from the Weddell Sea to the Ross Sea. He would use air support to perform route reconnaissance and aerial photography, and also to lay depots. Extensive surveys would be made of the unmapped coastline from the Weddell Sea to Graham Land. Watkins had prepared a detailed plan, including the staffing of the expedition, which was to include several members of the Greenland Expedition. His route avoided the South Pole as he wished to concentrate on less well known areas of the continent.<sup>9</sup> Since these expeditions were private ventures financial backing was crucial, and this being the early nineteen thirties, Watkins' journey was swept away by the vicissitudes of the Great Depression. The old adage 'Timing is everything' comes to mind. As we shall see, this tenet applied equally to Fuchs' expedition twenty years later.

And so, despite many technological advances, in communications, aeronautics, and vehicular transport during the decades following World War II, it was not until almost forty years later that another attempt to cross the continent of Antarctica would not only be conceived in the mind and on paper, but would gain sponsorship and be actioned in the field.

Let us now turn to the person within whom the flame of Antarctic adventure burned brightest; a man of uncommon intellect, strong discipline, and abundant patience; a scientist, and yet a dreamer; a very determined man and one with much practical experience in the field. Great achievement, it is said, requires the confluence of many factors, an opportunity and the person to seize it. Such a person was Vivian Ernest 'Bunny' Fuchs.

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<sup>6</sup> Helm A., Miller R., *Antarctica*, p.33

<sup>7</sup> Reader's Digest, 'Antarctica'

<sup>8</sup> Ibid

<sup>9</sup> Ibid (fn 6)

## I. CONCEPTION

Vivian Ernest Fuchs was born in England on February 11th, 1908. At the age of eighteen he was admitted to St John's College, Cambridge, reading natural history with an emphasis on geology. His tutor was none other than Sir James Wordie who had served on Shackleton's '*Endurance*' expedition. Three years later he was in Greenland with one of Wordie's private expeditions. A year later, following a meeting with the eminent anthropologist Louis Leakey, Fuchs found himself in Africa, where he was to spend seven years exploring and geologising in the East African Lakes.

In 1943, as part of its WWII effort the United Kingdom had initiated a naval operation focused on the Falkland Islands Dependencies. This was called 'Operation Tabarin' and was designed to preclude the Third Reich from making use of the sub-Antarctic islands as safe-harbours or as re-fuelling stations for the German fleet. A second objective was to ensure safe passage through the Drake Strait between South America and the Antarctic Peninsula in the event that hostilities broke out with Argentina over sovereignty in the area. The plan was to place two bases, one on Deception Island, and the other on the Peninsula or Graham Land as it was known to the British.<sup>10</sup> Operation Tabarin created the foundation for what was to become the Falkland Islands Dependencies Survey or FIDS, the forerunner of the British Antarctic Survey (BAS).

Fuchs, known to his friends as 'Bunny', came out of the war looking for a job. He was now 38 years old. He was reluctant to turn away from Africa but, on the advice of a friend, he applied to work as a geologist with FIDS. Much to his surprise, and again with the figure of Wordie in the background, he was offered the role of Field Commander, responsible for all the UK bases in the region. His adventure in the Antarctic had begun.

In late 1947 he set sail for Stonington Island in an American defence ship designated as AN-76. During the war she had been a net minder named the *HMS Protector*<sup>11</sup> and was now the *John Biscoe*. She later became the *HMNZS Endeavour* and served New Zealand's needs in the Ross Sea very ably during both the TAE and then the International Geophysical Year (IGY).<sup>12</sup>

Fuchs soon became familiar with the adversity that the Antarctic can bestow. In 1948, the John Biscoe was unable to reach the British team at Stonington Island due to severe ice conditions. He and the FIDS party were forced to spend an additional year in their frozen environment, a year that would, however, bear fruit.<sup>13</sup> On one of their sledge journeys across King George VI Sound, Fuchs and a colleague, Raymond Adie, were trapped by a fierce blizzard. While in their tent waiting this out over several days, there emerged, scribbled on a single sheet of paper, the first inkling of Fuchs' plan for crossing Antarctica.<sup>14</sup> In such a modest way the great journey took its first tangible step.<sup>15</sup> It was not until 1950 that Fuchs followed this up with a telegram to Wordie.<sup>16</sup> Many conversations followed between the two men,

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<sup>10</sup> Fuchs, Vivian, 'Of Ice and Men', p.21-22

<sup>11</sup> Ibid

<sup>12</sup> Helm-Miller, 'Antarctica' p.121 note that she became the Royal Research ship *Pretext* after being the *John Biscoe*. This is the only reference I have seen on this.

<sup>13</sup> Sullivan, Walter, 'Quest For A Continent', p. 279

<sup>14</sup> Fuchs, Hillary, 'The Crossing of Antarctica', p. 1

<sup>15</sup> Fuchs, Peter, Correspondence with the author, Jan. 2006

<sup>16</sup> Ibid (fn 14), p. 2



often at Wordie's home in Cambridge. As Britain was still recovering from the aftermath of WWII and was dealing with sovereignty issues with the Argentine, Wordie advised Fuchs to hold back from promoting his idea until conditions became more propitious. It was vital to approach both the UK Government and the polar and scientific agencies at a receptive time. Wordie would advise Fuchs when this moment had arrived.<sup>17</sup>

It was In 1953 that Wordie advised Fuchs that the time was right to bring forward his TAE plan. Post-war issues had been addressed and Antarctic territorial disputes had quietened. The ascent of Mt Everest had lifted the mood in the UK and a new monarch had taken the throne. The empire was strong. Wordie and Fuchs conferred regularly during this time as the details of a plan were laid out. There were cross-currents as key people had differing agendas and past disagreements simmered. These personality issues in some ways exceeded the technical difficulties of the venture. The in-fighting amongst the UK polar community was intense. On the one side were aligned Dr. Brian Roberts, of the Foreign Office, Dr. Lawrence Kirwan, Director of the Royal Geographic Society (RGS), and Dr. Colin Bertram, Director of the Institute, each a powerful figure in British polar circles. In his own corner, Fuchs had Wordie, Sir John Slessor, Marshal of the Royal Air Force, and General James Marshall – Cornwall, President of the RGS.<sup>18</sup>

However, Fuchs and Wordie had done their homework well and finally, with the careful selection of their committee members such as the Chairman, Sir John Slessor, won the support of the supreme figures in the UK, namely Queen Elizabeth II, who agreed to act as expedition Patron, and the Prime Minister, Sir Winston Churchill. With that kind of backing there is no recourse but to go forward.

It is important to note that the TAE was a separate venture from the IGY and a private one, in the tradition of the journeys of Scott and Shackleton. Funding was primarily from private sources with government providing additional support. As it happens, the TAE was competing with IGY projects for funding and, with respect to the Antarctic, for some of the glory of polar science. It helped considerably that Wordie was also head of the UK IGY team.<sup>19</sup>

A Polar Advisory Committee was assembled consisting of Sir James Wordie, Dr. Brian Roberts and Dr. Neil Mackintosh

At a meeting of this committee, held in September, 1953, the reasons to support such an expedition were noted in the following order:<sup>20</sup>

1. Prestige of nations involved
2. Romantic appeal
3. Justify territorial claims to Coats Land and the Ross Dependency
4. Knowledge of meteorological conditions at the South Pole
5. Knowledge regarding air routes potential
6. Knowledge of the Antarctic ice sheet and biology
7. Training for service personnel

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<sup>17</sup> Smith, Michael, Sir James Wordie – Polar Crusader

<sup>18</sup> Fuchs, Sir Vivian, 'A Time To Speak', p.221

<sup>19</sup> Ibid (fn 17)

<sup>20</sup> Falla Papers, Item - Polar Committee Meeting, Extract from Minutes, September, 1953, Part of a set of papers sent Sept 24, 1954 from Dr. Colin Aikman of External Affairs to Dr. Robert Falla.

These brought both political and scientific objectives together, wrapped them in the paper of national pride with 'adventure' serving as the ribbon and bow.

Counter-arguments were raised that Greenland would be better for training, that the expedition focused too much on the central hinterland rather than on the important fringe areas such as Graham Land, and that air routes were not really imminent. Fuchs then presented his proposal for the 'Trans Antarctic Journey', which at this early stage, had neither a decided direction for the crossing, nor a departure point.

### Departure Base

One of the fundamental assumptions of the plan was that the TAE would depart (or arrive) from within the Falklands Islands Dependencies. Both Stonington Island and Vahsel Bay were being seriously considered as possible base sites.

In his proposal, Fuchs stated a preference for travelling towards the Ross Sea, rather than *from* the Ross Sea, due to the more certain accessibility of McMurdo Sound by ship. The Weddell Sea was preferred as the starting point for the crossing precisely because of the ignorance surrounding its geography. It was known to be a much more difficult area to access due to the treacherous nature of its ice pack.<sup>21</sup> The uncertainty this would create for the crossing party on arrival was unacceptable. It would mean disaster for a crossing party to arrive at their destination and not find their relief ship ready and waiting. There must be no doubt in that regard. Fuchs also noted that a Weddell Sea reception-base would present more complex logistics and add to the expense of the journey.<sup>22</sup>

In contrast, the route from the Pole to McMurdo Sound was much better known. This was a result of the previous expeditions of Scott, Amundsen and Shackleton. Also, there were huts on Ross Island and even supplies in those huts.

It must also be remembered that information about Antarctica was still very sparse and the best available information upon which to base their planning was that gathered during the 'heroic age' in the first decade of the century. The records of Filchner and Shackleton (and Scott and Amundsen for the Ross Sea area) were still used for this purpose.

Fuchs did make one error at this stage. This was to have serious consequences during the advance party voyage of the *Theron* and delay the establishment of Shackleton Base in the Weddell Sea by several weeks.

The following quote from Fuchs' plan is revealing, "The power and design of modern ice ships together with modern knowledge of ice navigation make the problem of the Weddell Sea far simpler than in the early part of the century."<sup>23</sup> This proved not to be the case and the *Theron* party found themselves having to resort to exactly the same methods as Shackleton in order to extricate their ship from the Weddell Sea ice pack. Fuchs' had developed a theory that the Weddell Sea ice was composed of, not one, but two ice packs swirling side-by-side. This hypothesis proved to be incorrect. Fortunately, *Theron* had the advantage of aircraft and with the valiant flying of Squadron Leader John Claydon, and the mastery of the ship's captain, Harald Maro,

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<sup>21</sup> Helm-Miller, Antarctica p.37

<sup>22</sup> Ibid (fn 20)

<sup>23</sup> Falla Papers, Item -Notes on the Proposal for a Commonwealth Trans Antarctic Expedition, Sept 24<sup>th</sup>, 1954

were just able to find a precarious route out of the icy jaws that had trapped Shackleton and the *Endurance*.<sup>24</sup>

Finally, in his 'Discussion and Conclusions', Fuchs recommended Vahsel Bay, at a more northern point than Filchner or Shackleton had considered, as the preferred site for the departure base. Despite the advantages of lower cost and straightforward logistics, there still remained the considerable risks caused by the uncertainty of the sea ice and the lack of an exact landing place for their vessel.

## **Governance**

In 1954, with the approach of the IGY, various initiatives were competing for the limited funds available to the UK Antarctic programme. Dr. Brian Roberts had for several years had a goal to complete an aerial survey of the Antarctic Peninsula. Fuchs meanwhile, with Wordie's support, was now promoting the Trans-Antarctic Expedition. Interestingly, Fuchs, at this time being Director of the Scientific Bureau, also had an interest in seeing Roberts' project proceed. As it turned out both projects were to go ahead, the TAE, as a privately funded enterprise, the other as a government sponsored IGY activity.

Fuchs was not the only person to be carrying the vision of the Antarctic crossing at this time. There was at least one other serious proposal in the works, that being from Duncan Carse. Carse proposed that New Zealand only need send a ship to the Ross Sea to pick up the crossing party rather than build a base in the Ross Dependency. His plan extended over three seasons, rather than two and his planned point of descent from the polar plateau was at Barne Inlet near the Beardmore Glacier.<sup>25</sup>

Even Sir Miles Clifford, Governor of the Falkland Islands Dependency, had proposed a FIDS managed and funded journey from Stonington Island to McMurdo Sound in 1951.<sup>26</sup> These shifting currents must have made it very difficult for Fuchs to maintain a positive outlook. Without his reservoir of determination and singleness of purpose, and, of course, the constant support of his mentor Wordie, it would have been easy for him to yield to the pressures. But Vivian 'Bunny' Fuchs was not one to put aside his dream, and subsequent events were to prove him right.

The next task was to decide on a name for the expedition. The emphasis needed to be on the 'Commonwealth' aspect. This was particularly true since material assistance from the 'Dominions' was going to be requested. After some discussion the committee adopted the name 'British Commonwealth Trans-Antarctic Expedition' pending the granting of official approval.<sup>27</sup> Eventually this would be shortened to simply the 'TAE'.

An executive committee for the expedition was formed consisting of Wordie, Fuchs, Sir Miles Clifford, and a representative of the RGS. A scientific committee and a finance committee were also established. A personnel committee would later be established.

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<sup>24</sup> Hillary, Edmund, 'No Latitude For Error', p.24

<sup>25</sup> DSIR, Proposal for New Zealand Scientific Work in Antarctic, Nov 2, 1953, NZ Archives, Christchurch, pages 3,4

<sup>26</sup> Fuchs, Vivian, 'A Time To Speak', p. 218

<sup>27</sup> Minutes of Inaugural meeting of the General Committee for the TAE, June 24<sup>th</sup>, 1954, Falla Papers, Canterbury Museum, Christchurch, New Zealand

It is interesting to note that at the inaugural meeting the committee considered that “it would also be necessary to set up shadow committees in New Zealand to organise operations in the Ross Sea sector.”<sup>28</sup> It was not until October 8<sup>th</sup>, 1954 that the New Zealand government sent the first communication indicating support for UK Antarctic Policy.<sup>29</sup> Obviously, the UK was confident of receiving some degree of support from New Zealand. What they did not know at this time was how significantly the New Zealand government were prepared to become involved. That was to become evident during the coming year.

At this meeting, Fuchs presented a revised expedition plan stating that use of Stonington Island in Graham Land as the expedition departure base was indeed feasible on condition that the Royal Air Force provided large-scale air support. He recognised that the use of Stonington Island was advantageous from a political point of view and would re-enforce the UK claim to sovereignty in the Peninsula. In addition, it offered a practical means to satisfy the aerial survey interests of the Science Bureau.

In a subsequent meeting, Fuchs advised that the cost of the Expedition would rise by £60,000 in comparison to use of Vahsel Bay. This was mainly due to the increased distance of the crossing route and the extended duration of the journey. However, the air support did reduce this additional increment by £30,000. The main effect of air support was to allow the duration of the Expedition to be cut back to a year and a half, the same duration as would be the case from a Vahsel Bay departure base. Otherwise, a Stonington Island departure would cause an additional twelve months to be added onto the Expedition timeline. The question for TAE London was whether the political advantages justified this additional cost. At this meeting, Fuchs expressed his preference for the Stonington Island departure base if air support could be provided.<sup>30</sup>

From these minutes, it was evident that there was still uncertainty about certain key expedition decisions. It was Wordie who, based on his first hand knowledge of the Weddell Sea, and perhaps a little sentiment, finally convinced Fuchs that Vahsel Bay offered the best point from which to launch his assault on the continent.<sup>31</sup> In an updated submission to the committee, Fuchs then revised his view for a final time and settled on Vahsel Bay. This was important since it also affected the timing for New Zealand’s part of the expedition.

A rather unsupportive comment from Kirwan was recorded showing that Fuchs had not yet fully won over his sceptics. When asked whether he still intended to begin the expedition in 1955 Fuchs answered that, yes, he did, if funding was available. Kirwan then “expressed doubts as to whether a year was sufficient to complete the organisation of the Expedition, since polar expeditions have usually taken longer to launch than originally planned”.<sup>32</sup>

It would be proven that he had seriously underestimated the leader’s ability.

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<sup>28</sup> Ibid

<sup>29</sup> Telegram Oct 8, 1954, from NZ External Affairs to the UK High Commissioner in Wellington commenting on UK Antarctic Policy proposal.

<sup>30</sup> Falla Papers, Item - Notes on the Proposal for a Commonwealth Trans Antarctic Expedition, Sept 24<sup>th</sup>, 1954

<sup>31</sup> Smith, Michael, ‘Sir James Wordie – Polar Crusader’

<sup>32</sup> Ibid (fn 21) above

The 'Trans-Antarctic Expedition Ltd.' had now been registered in the UK as a Company and a Committee of Management was appointed with Sir John Slessor as chairman and Wordie as vice-chairman.

At the Committee of Management's preliminary meeting one of Fuchs' main adversaries fell by the wayside with the refusal of Colin Bertram to accept a position as a Director of the TAE company. This further eased the task ahead for Fuchs. The import of Bertram's departure is only hinted at by the minutes which read: "It was considered unfortunate that the Director of the Scott Polar Research Institute should take this attitude, but it was agreed that Mr. Wordie as Chairman of the S.P.R.I. Committee of Management in fact represented that body".

This meeting also brought the IGY into the picture. Wordie proposed that, as the UK's lead body for the IGY, and in light of the National IGY Committee recommendation that a UK base should be built in Vashel Bay, the Royal Society should consider:

- a) sharing a ship with the expedition,
- b) that Fuchs should take charge of both parties and
- c) that the IGY should be a FIDS commitment.

Of these only item (b) was carried.<sup>33</sup>

The committee then agreed to contact the Canadian Defence Research Board to possibly obtain the use of a Canadian ice-breaker. This eventually resulted in deployment of the Canadian sealer *Theron*<sup>34</sup>

In June 1955, the committee again met on a more official basis. Frank Corner of New Zealand attended this meeting in place of the Hon. Charles M. Bowden, Chairman of the Ross Sea Committee. Bowden was the representative for New Zealand's Ross Sea Committee sitting on the UK TAE Committee. His representative was normally the New Zealand High Commissioner in London. It had been agreed that a New Zealand representative would attend the Executive Committee meetings of the UK TAE company. This would act to keep New Zealand informed of the Expedition plans and progress. It would prove to be a significant challenge to coordinate mutually dependent activity across the distance between London and Wellington.

The committee agreed, with the consent of the Royal Society, that Fuchs would have overall command of both the UK IGY and the TAE parties while they were in the same vicinity ie in the Weddell Sea. This provided efficiencies needed to defray the combined costs of the TAE and the IGY. The committee also suggested that the *John Biscoe* be considered as a possible ship for New Zealand to use to transport its party and equipment down to McMurdo Sound. This was on condition that she could be suitably re-conditioned.<sup>35</sup>

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<sup>33</sup> Two ships, the *Theron* (TAE) and the *Tottan* (IGY) were used, and the IGY was funded by the Government.

<sup>34</sup> Minutes of TAE Ltd. Committee of Management Meeting, March 10, 1955

<sup>35</sup> Minutes of TAE Ltd. Committee of Management Meeting, June 30, 1955

## II. POLITICS

Perhaps the most significant scientific event of the century was launched one evening in April 1950, from a private residence in Maryland, USA, when a small group of scientists gathered at the home of Prof. J.A. van Allen. At this social evening Dr. L.V. Berkner proposed that a second repetition of the International Polar Year (IPY) of 1932 be held after only 25 years rather than the planned 50 year gap. This was due to the rapid advances that had occurred in the fields of scientific knowledge, and in ionospheric research techniques in particular.

This idea became a formal proposal and was brought forward to the international scientific bodies during 1950 and 1951. At a meeting of the International Council of Scientific Unions in 1952 the scope was changed to include not only Polar Regions. In addition, they re-named the event the 'International Geophysical Year' or the IGY, and set the timing to July 1, 1957 through to the end of June, 1958. Unknowingly, they had placed the IGY directly alongside the TAE.

This preliminary meeting led to the first full meeting of the organising committee, held in July 1953 in Rome.<sup>36</sup> The following year in 1954, also in Rome, an IGY planning meeting was held from September 30 – October 4. At this meeting the CSAGI – Committee Special de l'Annee Geophysique sent a clear message to New Zealand that the international scientific community would like to see an IGY base in the Ross Sea area.

A total of 21 stations were either planned or in operation for geophysical research in Antarctica during the IGY, with 11 on the continent and 10 on surrounding Antarctic islands. It was important for the effectiveness of the geophysics to distribute stations at strategic points around the continent and not position them simply for convenience or for political gain. For optimum coverage the CSAGI recommended that stations be placed at certain 'gap' locations.

In this regard, the meeting passed Resolution 13 stating: "The C.S.A.G.I. invites the attention of the New Zealand Government to the very great desirability of a station at Ross Island or at a suitable site between Ross Island and Cape Adare."<sup>37</sup>

In similar fashion, Resolution 18 pointed out: "The need for a principle station at Vahsel Bay at approximately 77°S37°W is emphasised by CSAGI (...) The CSAGI emphasises the very great importance of these observations at this location during the IGY". This offer was to be taken up by the British government. In fact, the *Tottan*, carrying the UK IGY party, arrived in the Weddell Sea at about the same time as the *Theron*. It is a mark of the distinction between the TAE and the IGY that these parties utilised two separate ships for their voyage to essentially the same location. Some attempt at co-ordination was successful with Fuchs placed in command of both parties whilst he was in the vicinity.<sup>38</sup>

At the 1954 meeting in Rome, Russia stated their intention to place three bases on the continent including one at the South Pole. By the end of the Conference the Russians had agreed to leave the South Pole to the United States while they would build at the Pole of Inaccessibility. This showed the strong spirit of cooperation that

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<sup>36</sup> Periodical, 'Nature', August 22, 1953

<sup>37</sup> DSIR memo from G. Markham to Arthur Helm June 14, 1955 – Attachment extract 'Activities in the Antarctic During the IGY, National Academy of Sciences, in NZ National Archives, Wellington

<sup>38</sup> Ibid

underpinned the IGY initiative, despite the sensitive condition of global politics at that time.

As early as 1953, the Royal Society of New Zealand had set up a National Committee for the IGY in order to prepare a draft programme for New Zealand's scientific effort. Since 1923 New Zealand had largely ignored the Antarctic until the Rome conference highlighted the importance of the Ross Dependency to the overall IGY programme.<sup>39</sup>

Within New Zealand, the close, yet very distinct, association between the IGY and the TAE was marked by further comments in the report from the meeting which are quoted below:

“When the Government (*of New Zealand*) decided to contribute towards the Trans-Antarctic Expedition, which called for the establishment of a New Zealand base at McMurdo Sound, it also approved New Zealand's participation in the IGY on the basis recommended by the Rome Conference.”

And again:

“Apart from the IGY, another major enterprise in the Antarctic is being planned – the Commonwealth Trans-Antarctic Expedition.” ... As a part of the Trans-Antarctic Expedition, it was proposed that a base should be set up at McMurdo Sound in the Ross Dependency, ...”

By mid-1955 US policy regarding Antarctica was at a cross-roads. This was freely discussed at the Paris meeting of the IGY Antarctic Sub-committee held in July 1955. The options stated by Dufek were for the US to either “go forward with a really active Antarctic policy or pull out. No one has favoured half measures.”<sup>40</sup>

Taken together, the IGY and the end of the Korean war had provided the necessary impetus for those advocating that the US adopt a dynamic policy towards the Antarctic. Fortunately for New Zealand, they prevailed.

At this time the US was seriously considering making territorial claims of its own in Antarctica. At this meeting Paul Siple, Director of Scientific Projects believed that the US was within two to three months of making official territorial claims. These would not follow the ‘sector principle’ and initially would be both ‘outrageous’ and ‘patchy’.

The US IGY plans included dependence on using New Zealand as the base for flights to McMurdo Sound. The US are prepared to “offer New Zealand the fullest technical and material assistance to the New Zealand IGY party, including transport...”

This vital point was not lost on the attendees in Paris. Point 12 of the report from the meeting stated “The New Zealand Government may not realise how fully the Americans are aware that the whole future of their plans for the Antarctic hang on permission to use New Zealand air strips, both now and in the future. The Americans

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<sup>39</sup> Ibid

<sup>40</sup> Paper on meeting at Foreign Office to discuss results of Paris IGY Conference, Dr. Brian Roberts of the Foreign Office Research Dept and of SPRI. Sent by F. Corner to Secretary of External Affairs on August 5, 1955. Meeting was attended by Dufek, Siple, Mirabato, Snay and Kent (and possibly Hillary). NZ National Archives, Wellington (A111/9/1)

do not want to bargain openly about this, but are clearly prepared to pay generously for this privilege in terms of material aid.”<sup>41</sup>

This desire to build a strong relationship with New Zealand was confirmed with the assistance provided by Admiral Dufek to the TAE. The excellent relationship that the Admiral and Hillary had established from their first meeting in Paris in 1955, only made the task easier. The assistance that was eventually provided included:

- Transport for the 3 advance ‘observers’ to McMurdo Sound. Assisting those observers with local helicopter transport and aerial reconnaissance flights for route evaluation
- Transport of significant materials and stores by ship to McMurdo Sound on the John R. Towle
- Ice breaker assistance to the ‘HMNZS Endeavour’ as she entered McMurdo Sound
- Assistance in the selection of the site for Scott Base
- Assistance with bulldozers for the levelling of the Scott Base site prior to construction

Meanwhile, Captain Finn Ronne of the US Navy, who was in charge of the American IGY operations in the Weddell Sea and on the Peninsula, would provide critical support to the British contingent as they struggled to establish their forward base at South Ice. At one point, following a mishap, Fuchs had a hard job extricating one of his tractors from a crevasse. Finn Ronne states below:

“...expending hundreds of gallons of fuel oil. In a radio conversation with me, Dr. Fuchs expressed doubt that the crossing would be continued unless fuel supplies for his snowmobiles were replenished. He asked if I could help by flying 12 drums to South Ice Station.”<sup>42</sup> (the fuel was delivered to South Ice)

And again regarding a cable to Admiral Dufek:

“I asked that special permission be granted for the entire British party at Shackleton to be evacuated on our ships...in case the trans-continental trip had to be abandoned that year.”<sup>43</sup>

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<sup>41</sup> Ibid

<sup>42</sup> Ronne, Finn, ‘Antarctica, My Destiny’, Hastings House, New York, 1979 p. 246

<sup>43</sup> Ibid



### III. PARTICIPATION

In March 1953, the Commonwealth Polar Committee<sup>44</sup>, of which New Zealand was a member, met in London. This was the first time that officials of both the UK and New Zealand had broached the idea of an expedition to cross Antarctica.<sup>45</sup>

It took over a year for this idea to germinate into a formal response from the New Zealand government. Prime Minister Sydney Holland was proving to be very reluctant to commit New Zealand to any activity in its Dependency to the South.

Events were occurring at two levels, one between private individuals and non-government organisations, and the other between Government agencies. In the end it would prove almost impossible to separate the exploration/scientific aspects of the expedition from its political motive.

In September 1953, the New Zealand Antarctic Society (NZAS), under the signatures of its President, Dr. Robert Falla, and its Secretary, Arthur Helm<sup>46</sup>, sent an eight-page letter to Mr. Holland urging that New Zealand establish a permanent scientific base in support of IGY efforts in the Ross Dependency. Holland made a tepid response and said he would confer with his colleagues on the matter<sup>47</sup>

Coincidentally in London, also in September of that year, Fuchs was presenting his plans for the TAE to the Commonwealth Polar Committee. At this stage the TAE had not been announced by Britain and would only be made public three months later in December.

At a private level, Fuchs recognised the need to have the strongest possible representation from New Zealand. This meant only one person, the man who had just been to the top of the world – Sir Edmund Hillary.<sup>48</sup> At this point Fuchs was not intending to anoint Hillary as leader of any Ross Sea Party but was mainly seeking to enlist support from the New Zealand government and the people of New Zealand.

In this regard, Fuchs knew that Hillary's interest and backing would be key. If Hillary became New Zealand's leader for the Ross Sea Party, that would, perhaps, be a bonus.

Earlier in the year, at an RGS meeting in London, Fuchs had met George Lowe, himself recently returned from the Mt Everest triumph. Fuchs asked Lowe whether he would be interested in being part of a trans-Antarctic expedition - as official photographer. Fuchs also asked Lowe which group he would prefer to join, a New Zealand Ross Sea party or his own, to which Lowe replied that crossing the continent was his preference. This suited Fuchs well since, in addition to having significant expedition experience, Lowe would fulfil the intention that each party would have representatives of each other's country as part of their team thus enhancing the 'Commonwealth' aspect.

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<sup>44</sup> The Commonwealth Polar Committee included representatives of Commonwealth countries with interests in either the Arctic or Antarctic. Meetings were held at least annually.

<sup>45</sup> Falla Papers, Item - Notes on the Proposal for a Commonwealth Trans Antarctic Expedition, Sept 24<sup>th</sup>, 1954

<sup>46</sup> Robert Falla was himself an Antarctic explorer of repute and had been a member of Mawson's expedition of 1929-31.

<sup>47</sup> Helm/Miller, 'Antarctica', p.46

<sup>48</sup> The ascent of Everest was another 'Commonwealth' effort in fact, if not in name.

Fuchs also asked Lowe to see if Hillary might be interested in the idea of an Antarctic crossing, with New Zealand involvement at the Ross Sea end. In Fuchs' words to Lowe, "If you will also write to Ed Hillary and sound him out, I'd be glad. I want to know if I can get a New Zealand party interested."<sup>49</sup> This conversation prompted the first meeting between Hillary and Fuchs, the two 'knights of the ice'<sup>50</sup>.

In November 1953, just prior to the TAE public announcement, and while Hillary was in London on a lecture tour, Fuchs met with Hillary in his FIDS office. He outlined his plans for the TAE inasmuch as he had developed them up to that point. They included the need for a base in the Ross Dependency. That aroused the interest of Hillary and gave him much to think about.<sup>51</sup>

At the same time, governmental wheels were turning more slowly, but they were turning.

In late 1953, frank dialogue was being exchanged between scientific departments in the Department of Scientific and Industrial Research (DSIR). In November and December 1953, the DSIR sent a series of memos in response to a request from the Department of External Affairs. The subject was 'Scientific Work in the Ross Dependency' and it gives a good illustration of DSIR thinking at the time.

"The Department of External Affairs has requested D.S.I.R. to consider four proposals, details of which are summarised in the attached confidential paper....

c) Taking into account the full range of scientific work in which it is engaged, DSIR does not consider that it is justified, nor does the nature of the projects envisaged justify it, in taking the initiative in calling for, or organising, such an expedition.

(d) However, if it is decided on political, prestige, strategic or other grounds to establish such a base, DSIR would welcome an opportunity to be associated with it. It could offer help in programmes and planning, the secondment of scientific staff and to some extent by the loan of instruments.

(e) Similarly, DSIR regards with favour the scientific aims of the proposed trans-Antarctic journey but points out that the results to be expected, though valuable in themselves, will amount only to such as might be expected from a quick reconnaissance which could easily overlook major features. It is felt by DSIR that here again decisions as to the extent of New Zealand's support and assistance should be made on political and similar grounds, but DSIR would view such proposals with sympathy, would endeavour to make scientific staff available and would offer such assistance by way of planning and loan of equipment as possible.<sup>52</sup>

"I feel that our most useful work will not be done in the Antarctic...We should however cooperate if cognate activities can gain much down there, particularly in design and use of equipment....Fixing the position of south magnetic pole by observation should be done, but not if it involves a journey over-dangerous."<sup>53</sup>

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<sup>49</sup> Lowe, George, 'Because It Is There', p. 3

<sup>50</sup> Ronne, Finn, 'Antarctica, My Destiny', p 247. This term was used in the context of the radio conversations between Hillary and Fuchs, which were regularly overheard by the Americans.

<sup>51</sup> Lowe, George, 'Because It Is There', Hillary Edmund, 'No Latitude For Error', Fuchs, Vivian, 'A Time To Speak'

<sup>52</sup> DSIR, Memorandum to Directors, from D.Doyle (for Secretary), November 13, 1953, NZ Archives, Christchurch (S.I.R. 40/157.DD)

<sup>53</sup> DSIR, Memo to Superintendent of Geophysics, December 11, 1953, NZ Archives, Christchurch

This rather lukewarm support for Antarctic scientific research showed that it was mainly political and not scientific forces that drove New Zealand's decision to engage with the global Antarctic community in the years 1955-1958. This occurred as a result of the TAE and was not due to the IGY on its own. The New Zealand IGY programme was later 'piggy-backed' onto the TAE.

A comment made by John Hannesian Jr. in Trevor Hatherton's book 'Antarctica' is quite frank. He wrote:

"It was not until late 1953 that strong Antarctic interest was generated in New Zealand. Even at this time it was not New Zealand initiative, but rather the news of British plans for the Trans-Antarctic Expedition (TAE) which caught the imagination of the New Zealand public. Coincident with these preparations was the planning for the IGY, and the combination of these two elements caused public interest to mount rapidly"<sup>54</sup>

Perhaps the closing comment in this DSIR correspondence was the most telling:

"I cannot comment on political, sovereignty and economic factors, but I would be failing in my duty were I not to urge serious need to consider Ross Dependency observations from the national prestige angle. In London, Denmark, and Apia I have listened to strong criticism of New Zealand for so-called prostitution of science for commercial gain while neglecting its national responsibility in projects such as now being considered. It was pointed out that New Zealand had neglected pure science, was a wealthy country with wide territory, and population little less than Norway and Denmark which had done so much for pure science globally"<sup>55</sup>

These strong words drove home the need for New Zealand to participate in scientific goals of the IGY.

Caught between the TAE and the IGY, pressure was inexorably mounting for New Zealand to take its place among leading Antarctic nations. This pressure was heightened considerably by lobbying from inside New Zealand and, in particular, the efforts of the New Zealand Antarctic Society (NZAS). At the end of 1954, the Society requested and was granted an interview with the Prime Minister. However, it was the Minister for Foreign Affairs, Tom Macdonald, who heard their submission.<sup>56</sup> They were heartened by Macdonald's response.

There were other events that kept Antarctica in the public eye. The US were about to visit New Zealand with the 'Atka' expedition. In addition, the national press in New Zealand picked up the cause and ran several sympathetic editorials during this period.

In October, 1954, in a 'Secret' telegram from New Zealand External Affairs to the UK High Commissioner in Wellington, New Zealand first made clear its view on a trans-Antarctic expedition. This was delivered by the Government as part of its comment on broader UK policy for the Antarctic. The exact words relating to the idea of a trans- Antarctic expedition are quoted below:

"the Government views with favour the proposal for a trans-Antarctic expedition and is agreeable to the establishment of a reception base in the Ross Dependency. It was

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<sup>54</sup> Hatherton, Trevor, (editor), 'Antarctica' – Chap 1 National Interests In Antarctica, p.19

<sup>55</sup> Ibid

<sup>56</sup> Peat, Neville, 'Looking South – A History of the New Zealand Antarctic Society', 1983, NZAS

indicated that no decision has been made as to whether the Government will be able to participate in the project but that further attention will be devoted to this aspect”<sup>57</sup>

Finally, on May 14<sup>th</sup>, 1955 came the announcement by the New Zealand Government, that it would support the Trans-Antarctic Expedition with a grant of £50,000. The Minister of External Affairs, T.L. Macdonald also announced that a special committee would be set up to oversee the establishment of the reception base in the Ross Dependency. This would be called the Ross Sea Committee.<sup>58</sup> Shortly thereafter, they incorporated the company Trans-Antarctic Expedition New Zealand Inc.

The Ross Sea Committee held their first meeting on June 3, 1955. At this meeting Mr. Holland addressed the Committee outlining the support that the Government was willing to give to the Expedition. This included a grant of £50,000 and assistance from government scientists. He expressed confidence that a public appeal would raise significant additional funds from the public. He was mistaken in that regard, as after much hard effort across the country the target of £100,000 fell woefully short. New Zealanders supported with their heart but not with their pocketbook.

On a positive note, it turned out that the British had a vessel that might be available. The *HMS Protector*<sup>59</sup>, a wartime net-layer, had been renamed *John Biscoe* and assigned to FIDS since 1947. She was now on the discard list. As Vivian Fuchs notes in his book on FIDS, “By 1954 *Biscoe* was ageing...The new *John Biscoe* was launched at Paisley...”<sup>60</sup> The subsequent purchase by New Zealand of the *John Biscoe* illustrates the financial constraints that circumscribed the New Zealand operation. True to type, New Zealand again showed her ability to do a lot with a little. Without a ship, the Ross Sea Party could not fulfil its mission or it would have to rely entirely on the US Navy for its transport. TAE would hardly be a ‘Commonwealth’ venture in that case.

This bargain hunting caused some in New Zealand to take offence, particularly Frank Simpson, editor of ‘The Antarctic Today’ and a prominent, if somewhat controversial, Antarcticist of the time. Simpson’s allegations that New Zealanders were being put at risk by the Government’s parsimony had to be countered by the Prime Minister.<sup>61</sup>

The sale price was a very reasonable £20,000, and the re-named *HMS Endeavour* served New Zealand with distinction throughout the TAE and the IGY, and beyond.<sup>62</sup>

An interesting point raised at the London Management Committee meeting noted that perhaps New Zealand had made a sharper deal than was first supposed. Regarding the very favourable Lloyds’ report on the state of the vessel following its re-fit, the Colonial Office representative said, “Indeed, it might be desirable to conceal the facts about the *Biscoe* from the United Kingdom Treasury lest they regret authorising the building of a new ship”<sup>63</sup>

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<sup>57</sup> Telegram from External Affairs to UK High Commissioner in Wellington, Oct 8, 1954, Falla Papers, Canterbury Museum, Christchurch, New Zealand

<sup>58</sup> Helm-Miller, ‘Antarctica’, p.49

<sup>59</sup> Referred to as *HMS Pretext* in Helm-Miller. I’m not sure if this is an error.

<sup>60</sup> Fuchs, Vivian, ‘Of Ice and Men’, p. 142

<sup>61</sup> Helm Papers, Alexander Turnbull Museum, Wellington

<sup>62</sup> Quartermain, L.B., ‘New Zealand and the Antarctic’, 1971, note that Hugh Logan states £10,000 was the sale price in ‘Cold Commitment’

<sup>63</sup> Falla Papers, Item – Letter from Frank Corner to External Affairs, August 16, 1955

## Ross Sea Party Leader

Meanwhile, New Zealand had not yet made a decision on a leader for its own team. Certainly, Sir Edmund Hillary had been consulted, but the Ross Sea Committee did need to go through 'due process' as there were other candidates for the leadership role. Names that were mentioned included Dr. Ernest Marsden. There were others.<sup>64</sup> However, Hillary had charisma and the public would be solidly behind him as leader. Also, he wanted the role and he had a jump start on any rival through his earlier meetings with Fuchs. London would certainly support that choice. The Ross Sea Committee meeting revealed that on May 31, 1955, an

"informal discussion had been held with Sir Edmund Hillary following which it was intimated to Sir Edmund that the Committee could ensure him of a useful part in the Expedition, which could mean the position of Leader; and that for the time being the Committee would be prepared to co-opt him as a member of the Committee".<sup>65</sup>

This would give Hillary the necessary status for discussion with UK, Australian and South African counterparts as he toured with the objective of gaining support for the Expedition. It is a measure of the interest that he had in leading the TAE that he agreed with this suggestion.<sup>66</sup> However, that status did not last for long.

On June 9<sup>th</sup>, 1955, while on a lecture tour to South Africa with George Lowe, Hillary received the word he had been hoping for. He received a telegram from the Ross Sea Committee inviting him to lead the Ross Sea Party of the TAE, to which he responded quickly with his acceptance.<sup>67</sup>

With the Expedition leaders now chosen, momentum built rapidly. A key event was the imminent IGY Conference scheduled in Paris for July, 1955. Both Fuchs and Hillary would attend that meeting. Of singular importance is that Admiral George Dufek and a senior US team also attended the Conference. It would be in Paris that bonds of lasting respect, if not close friendship, began to develop between these three key figures in Antarctic history.

Hillary's eyes were opened by what he saw and heard in Paris, and he wrote an extensive report after the Conference, which he sent to Arthur Helm, Secretary of the Ross Sea Committee. To the surprise of both he and Fuchs, it was in Paris that he learned of US plans to establish a base in McMurdo Sound. Dufek's attempts to minimise the fact by assuring him that it would only be a 'logistics base' and could be dismantled after the IGY, did not allay Hillary's reaction. As he put it, "...as the Americans will be cluttering up McMurdo Sound, it will be much more difficult for us to find a base."<sup>68</sup>

His patriotic instincts were aroused. He wrote "I also felt considerable concern at the sovereignty angle and can only hope that Munro in Washington has at least some proviso from the Americans that New Zealand sovereignty will be respected"<sup>69</sup>

In order to salvage some positive result, Hillary asked Dufek if he would take down two New Zealand observers on Operation Deepfreeze, and assist them in performing

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<sup>64</sup> Falla Papers, Item - Minutes of NZ Antarctic Policy Meeting, Sept 21, 1954

<sup>65</sup> Falla Papers, Item - Minutes, Ross Sea Committee, June 3, 1955

<sup>66</sup> Ibid

<sup>67</sup> Hillary, Edmund, 'Nothing Venture, Nothing Win', p.220

<sup>68</sup> Letter from Hillary to Arthur Helm, July 13, 1955, Falla Papers, Canterbury Museum

<sup>69</sup> Ibid

reconnaissance of the area around the Ferrar Glacier. This was in order to find a suitable site for the New Zealand base and a route for the TAE party to access the Polar Plateau. Both Fuchs and Hillary considered it unworkable for bases from different countries (and cultures) to be side by side. Hillary also anticipated (correctly) that the US would be operating on a far grander scale than New Zealand.<sup>70</sup> The Americans were generous in their response and offered to provide cargo space on their ships heading to McMurdo Sound for the expedition's gear and supplies.<sup>71</sup>

This generosity created a minor dilemma for Fuchs in that the British were very reluctant to accept aid from the US for what was being touted as a 'Commonwealth' venture. As a mitigating move, Hillary suggested that the TAE party use the *John Biscoe* while the US cargo ship *John R. Towle* would transport the IGY equipment and supplies.<sup>72</sup>

## Final Planning

A month later, on August 10, 1955 a joint meeting was held in New Zealand between the IGY Committee, the Royal Society's Scientific Sub-committee and Hillary.

The meeting was held to explain the IGY proposals to Hillary and to resolve some difficulties that had arisen. These 'difficulties' were to do with the number and make-up of the New Zealand IGY representatives who would accompany the TAE group to McMurdo Sound as well as the observers that would accompany the Americans on the US Navy ships from Operation Deepfreeze.

Personnel selection is often a sensitive matter, especially when more than one organisation is involved. The IGY selected one of the three, namely the Chief Scientist, Dr. Trevor Hatherton. The Royal Society were to select the other two. However Hillary did provide his input which was that a track-vehicle expert and a base reconnaissance person be sent down. It was clear at this point that Hillary was looking to use tractors and wanted to ensure the route to the plateau would allow access by tractor. As it turned out, Dr. Bernie Gunn - geologist, Lt. Commander William Smith - RNZN, and Dr. Hatherton were selected as the advance party members. Their mandate would be twofold: To perform reconnaissance of McMurdo Sound in order to select the best site for the 'reception base' and to identify and prove the best access route for the expedition onto the polar plateau.

At this meeting, Hillary expressed his disagreement with the idea of appointing the Chief Scientist, Dr. Trevor Hatherton to be Deputy Leader of the Ross Sea Party. Hillary's reasons were practical as he wanted a 2IC who would be "capable of leading a field party to set up a depot at Mt Albert Markham in case he (Hillary) were to crash up". Hillary's preference was for the Chief Scientist to be in charge of base camp when both the leaders were absent in the field. The IGY Committee accepted this approach<sup>73</sup>. By this time, New Zealand had decided that the base would serve the IGY needs as well as those of the TAE.

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<sup>70</sup> Ibid, Operation Deepfreeze was the name given to the US effort to establish bases in Antarctica. Admiral George Dufek led US Task Force 43 in this endeavour.

<sup>71</sup> This space would later be provided by the Private John R. Towle. The *John Biscoe* (Endeavour) had a capacity of only 14,000 cubic ft. Dufek offered 40,000 cubic ft. to New Zealand.

<sup>72</sup> Ibid (fn 68)

<sup>73</sup> NZ Archives, Item - Handwritten Memo for File – Joint Meeting of IGY Committee and Royal Society Scientific Sub-committee with Sir Edmund Hillary, August 10, 1955, B.H., (EA W2619-208/6/2)

With the decision by New Zealand to play a full part in the IGY, Hillary was becoming more attuned to the scientific potential of the expedition. As he said in his autobiography: "For my field parties I envisaged a wide programme of exploration, survey and geology in the mountains of Victoria Land. It was an exciting prospect as I saw us grow from a modest supporting-role – very much the junior partner – into a major national operation"<sup>74</sup>

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<sup>74</sup> Hillary, Edmund, 'Nothing Venture, Nothing Win', p.224, Hodder & Stoughton (Coronet) paperback edition

## IV. PREPARATION

In his original planning for the TAE, Vivian Fuchs had intended to descend into McMurdo Sound via the Ferrar Glacier. There were several reasons for choosing this path.

First, it satisfied the geophysical survey needs of the expedition in that it offered the longest possible traverse atop the Plateau. This assured a more certain study of the underlying continental topography. The main scientific goal of the expedition was to determine whether Antarctica consisted of one integral craton or two distinct continental land masses.

Second, Scott's 'Discovery' expedition of 1901-1904 had traversed the Ferrar Glacier. Scott's Western Party performed this traverse under the leadership of Albert Armitage.<sup>75</sup> The fact that to reach the Ferrar the crossing party would cover a considerable distance in Australian Antarctic Territory added to the 'Commonwealth' tone and served to ease any decision for Australia to participate.

Only two other Ross Sea glaciers were known to the world in 1950, the Beardmore, first traversed by Shackleton in 1908, and the Axel Heiberg. These had been used by Scott and Amundsen in their respective journeys to the South Pole in 1911-1912. They were shorter routes but did not satisfy the TAE scientific requirements. Being much further to the South these glaciers descend off the Plateau too soon en route from the Pole.

Another, perhaps obvious, point was that the Ross Sea party needed to ascend to the Polar Plateau using the same route as the crossing party would use for the descent. One of the Ross Sea Party's objectives was to scout a route for Fuchs' Sno-Cats to descend to the Ross Ice Shelf.

Because of its proximity to the Ferrar Glacier, Butter Point<sup>76</sup>, which is located on the Western shore of McMurdo Sound near the foot of the glacier, was imagined to offer the best location for the crossing party's reception base. It then became the task of the New Zealand advance reconnaissance team, consisting of Dr Bernie Gunn the geologist, Dr. Trevor Hatherton (added later as the New Zealand IGY Chief Scientist) and Lt. Cdr. William Smith of the New Zealand Navy, to examine these areas and advise the Ross Sea Committee on their suitability. In December 1955, Dufek made good on the commitment he had made to Hillary in Paris and the three men travelled south from Lyttelton with the US Operation Deepfreeze.<sup>77</sup>

The US provided marvellous support to the New Zealanders during their period in McMurdo Sound. In addition to transportation and room & board, Gunn was flown over an extensive area of the Western Ranges in order that he might assess the various glacier routes up to the Plateau. In addition, US helicopters transported the New Zealand sledging parties to and from the foot of the Ferrar Glacier in order to perform their reconnaissance on foot.

Ideally, the Plateau access route would accommodate both dogs and tractors. Tractors had never been taken to the Plateau. They constituted an entirely new and untried aspect of Antarctic exploration. The thought that those tractors might travel all

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<sup>75</sup> Scott, Capt R.F., 'Voyage of the Discovery', reprinted 1950

<sup>76</sup> The name Butter Point came from the fact that Scott had located a depot of butter there

<sup>77</sup> Quatermain, New Zealand and the Antarctic, 1971



the way to the Pole was the furthest thing from the minds of the advance party at this time (although Hillary himself was certainly considering the possibility). According to the Expedition plan, the ultimate goal of Hillary's team was to establish a depot at the foot of Mount Albert Markham. This was the agreed rendezvous at which Fuchs' Snow-Cats would meet up with Hillary's Ferguson converted farm tractors<sup>78</sup>.

At this point it is worth mentioning a comment that Hillary made in his letter to Arthur Helm following the Paris Conference (which Fuchs also attended):

"Yesterday, I had some useful discussion with Fuchs. I wanted to clear up a few points of policy in respect of planning. I have not of course had the opportunity of getting the Ross Sea Committee's view on this, but if there is anything you particularly disagree with you had better let me know. These all apply to the establishment and operation of the New Zealand base in McMurdo Sound.

1. That, subject to the limitations of finance and shipping we should plan on the basis that, although the journey objective of the New Zealand end must be the establishment of a dump at Mount Albert Markham, that the expedition should have sufficient supplies and equipment so that if organisation and time permits, or an emergency occurs, the Party could travel out as far as the South Pole."

Hillary continues:

"I feel that the greatest weakness of our present plan is the lack of tracked vehicles. I intend going into the known information on the Ferrar Glacier...It might be possible to get vehicles out onto the Polar Plateau"<sup>79</sup>

These comments show what Hillary was thinking eighteen months before leaving for McMurdo Sound and barely a month after he was appointed expedition leader. Also, it is unlikely that Fuchs was not aware that Hillary's planning would allow him to reach the Pole.

## **Advance Parties**

On January 1 and 2, 1956, Bernie Gunn flew with Lt. Cdr. Henry Jorda, of the US Navy on an extensive reconnaissance flight over the eastern escarpment of the Victoria Land coastal ranges.<sup>80</sup> Gunn eliminated several possible ascent routes including the Koettlitz, the Muluk, and the Shackleton glaciers. Even the Dry Valleys were inspected and found unsuitable. In what would be of great importance later on, Gunn did notice, almost as an aside<sup>81</sup>, that the Skelton Glacier looked quite passable. The Ferrar Glacier was covered in cloud except for the lower two miles, which in his words looked "very rough with open crevasses and large melt pools". Gunn also suggested that further examination of the Ferrar would be necessary before it could be confirmed as the ascent path.<sup>82</sup>

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<sup>78</sup> Hillary's preference would have been for Sno-Cats but New Zealand could not afford them. Cawthron Memorial Lecture, No. 33, 1958 p.8-9

<sup>79</sup> Falla Papers, Item - Letter, Hillary to Arthur Helm, July 13, 1955, Report on IGY Conference in Paris

<sup>80</sup> New Zealand Antarctic Society Journal, Antarctic, Vol 1, Issue 1

<sup>81</sup> The Skelton Glacier was not accessible from Butter Point where New Zealand planned to put her base. Therefore it was not considered further.

<sup>82</sup> Falla Papers, Item - Gunn, B. M., Interim Report of Observations of Possible Routes for the New Zealand Antarctic Expedition, Dec 20 1955 – January 7 1956

In the meantime, Dr. Hatherton's report on the reconnaissance that he and Lt. Cdr. Smith performed was submitted to the Ross Sea Committee. This report recommended that Butter Point be utilised as the site for the New Zealand base, now referred to as 'Scott Base'.<sup>83</sup> (This name was chosen as an appropriate response to 'Shackleton Base' built by Fuchs' party at Vahsel Bay.)

Hatherton's recommendation is worthy of some discussion.

From the scientific ie IGY perspective, Butter Point was superior to any site on Ross Island. First, there was less disturbance of sensitive seismic instrumentation from volcanic activity of Mt. Erebus. Second there was direct 'line of sight' to New Zealand for effective radio communications. It was also better positioned regarding the sun and so offered a better climate. From the TAE perspective the advantages were not so obvious. As a building site it suited well, but the issues of water supply, aircraft operation and access by ship to the land meant that the site did not meet operational requirements. This was to cause Hillary and the Ross Sea Party significant difficulty in six months time.<sup>84</sup>

As Wg. Cdr. John Claydon stated in his Antarctic Flight report<sup>85</sup> :

"The New Zealand observers attached to the 1955 "Deep Freeze" Expedition had recommended the above base site [Butter Point] after careful study of other areas but was a rather unfortunate choice from the Expedition point of view as the two primary qualifications for a base were:-

- a) Suitable access by ground parties to the Polar Plateau
- b) Satisfactory surface for aircraft operation

Hatherton's recommendation had also effectively eliminated the Skelton Glacier as an ascent route since access was impossible over the bay ice. That left the Ferrar Glacier as the only alternative. It would be left to Hillary and his team to sort out the consequences during the following summer.

## Endeavour Sails

The New Zealand team, aboard *HMNZS Endeavour*, departed from Bluff on December 21, 1956, carrying with them the hopes and best wishes of all New Zealanders. This voyage was the culmination of three years of tremendous effort by many dedicated individuals, organisations, associations and corporations.

After encountering severe storms on entering McMurdo Sound, the scene that greeted Hillary at Butter Point on January 4<sup>th</sup> was most discouraging. At first, *Endeavour* was beset in ice and could not approach her landing site near Butter Point. Assistance was requested of the Americans who responded quickly. The *USS Glacier*, at that time the world's most powerful ice-breaker, was sent to the aid of New Zealand.<sup>86</sup>

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<sup>83</sup> Hatherton, T., Joint Preliminary Report on the Base Site Reconnaissance Journey, McMurdo Sound, December 31, 1955 – January 4, 1956, Falla Papers, Canterbury Museum

<sup>84</sup> Hatherton's report also recommended the Ferrar Glacier as a passable route to the Plateau, with the proviso that further examination be conducted the following summer

<sup>85</sup> Claydon, John, 'REPORT By Officer Commanding RNZAF Antarctic Flight, 1955-1958, Canterbury Museum, Christchurch

<sup>86</sup> Helm-Miller, Antarctica, p. 144

This request was made with some reluctance. As Capt H. Kirkwood noted in his report for January 4th "it went against the grain, to do so".<sup>87</sup>

That evening, Hillary, Capt. Kirkwood, Admiral Dufek and Capt. Ketchum dined on board *Glacier*. Although Dufek was prepared to assist Hillary in breaking a channel towards Butter Point, he made it clear that the Americans were not impressed with its suitability as a site for the New Zealand base. After dinner, Kirkwood, Bob Miller - Deputy Leader of the New Zealand party, and Hillary, were flown to the proposed site by US helicopter for a look around.

Bob Miller's first impression was mixed, 'Site is a good one although there are many difficulties in the approach'<sup>88</sup>

Kirkwood was more direct. He notes that Hillary was "satisfied but slightly disillusioned" while in his own words, "I was disappointed with the site. It was dismal in outlook and the transport of stores over the bay ice was obviously not going to be easy"<sup>89</sup>

However, Hillary was not one to give up easily and further effort was made to evaluate the site. With the icebreaker *Glacier's* assistance, *Endeavour* was able to make her way to within 8 miles of Butter Point.

On the following morning, January 5<sup>th</sup>, all efforts were put to unloading the *Endeavour*. Hillary then set off by tractor to try to find a suitable route to the site. The condition of the sea ice made travel very difficult due to the rough ice surface and the pressure ridges. John Claydon recorded "the prospect of a good approach to the base site looked grim.... A wide tide crack and melt pools between the sea ice and the terminal face made access impossible."<sup>90</sup> The site was closely examined, but it failed on at least four counts:

1. Unloading and transporting gear and supplies from the *John R Towle* and *Endeavour* would have been impossible before the summer break-up of the bay ice.
2. Unloading might have been done at Butter Point itself (4 miles north of the proposed site), however the Bowers Piedmont Glacier effectively blocked the path to the site.
3. It was Impossible to get dogs teams or tractors, onto the Ferrar Glacier from the sea ice. This would deny access to the Polar Plateau (The Ferrar was still the chosen route to the Plateau at this point)
4. Operating the aircraft from the sea ice beyond the end of January would have been impossible due to break-up.

As Claydon noted in his report "It was generally agreed that while it may have been an ideal site for scientific studies, it was quite impossible from the Expedition point of view."<sup>91</sup>

This was one unfortunate result of combining both the IGY and the TAE into the prior year's advance reconnaissance party brief.

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<sup>87</sup> Kirkwood, Capt. H., 'HMNZS Endeavour – Report of Proceedings to the NZNB on the Antarctic Voyage & Naval Operations in support of the British New Zealand Trans Antarctic & IGY Expedition, December 1956 – March 1957. (Note this title was revised for the 1957-1958 Report) p.5

<sup>88</sup> Miller, Sir Joseph Holmes 'Bob', 'CTAE Diary 1955-1958, Alexander Turnbull Library, Wellington, New Zealand, entry for January 4th

<sup>89</sup> Ibid

<sup>90</sup> Claydon, John R., REPORT 'Antarctic Flight', 1955-1958, Refer to photographs in Appendices.

<sup>91</sup> Ibid p.40

On January 8<sup>th</sup>, just four days after arriving in McMurdo Sound, Hillary made the decision to abandon the site on which the expedition had pinned its hopes. Later that day, at the invitation of the Americans, extended during a discussion on board the *Endeavour* with Hillary and Bob Miller, the two boarded a US helicopter and, at the invitation of the Americans, proceeded to examine Pram Point. (John Claydon radioed to say that Hut Point Williams Field would welcome the New Zealanders.)<sup>92</sup> Hillary and Miller returned two hours later, both decided and enthusiastic about the site. Two hours later a tractor left for Pram Point to mark out the base and set up the tents.<sup>93</sup>

Scott Base finally had a home!

Yet, the elation was short lived. A second blow was to come during the following week.

### **Route to the Plateau:**

With Scott Base now taking shape on Pram Point, a party consisting of Dr. George Marsh, medical officer and dog expert, Harry Ayres, an outstanding mountaineer and dog expert, Richard Brooke, the Englishman and surveyor, and the engineer, Murray Ellis, along with three dog teams, prepared themselves to carry out a thorough examination of the Ferrar Glacier.<sup>94</sup> This trip was pre-empted when, on January 13<sup>th</sup>, a US helicopter took Marsh on an extensive flight over the glacier. They could discern no practical route and Marsh radioed this message back to Hillary. It was very disappointing and in the words of Bob Miller, "Now all of last year's reconnaissance has been nullified"<sup>95</sup>

Once more, Hillary did not take this news as the final word. He decided to have another look. Fortunately, the flight team had just assembled and tested the Beaver aircraft. He and John Claydon wasted no time in immediately putting the aircraft to good use. Hillary recounts the following:

"On January 15<sup>th</sup> the assembling of our Beaver aircraft was completed and it was successfully test flown. A few minutes later we were on our way across McMurdo Sound towards Butter Point. We flew back and forwards across the lower Ferrar Glacier seeking a chink in the defences, but in the end I had to admit defeat. The glacier was a continual succession of melt pools and ice pinnacles, and it was split by great ice trenches which carried turbulent streams down to the sea".<sup>96</sup>

This flight eliminated the Ferrar. How would they get to the Plateau?

Fortunately, Hillary remembered a comment made by Bernie Gunn that the Skelton Glacier appeared to offer an attractive access to the Plateau.<sup>97</sup> This had been obtained from the flight with Henry Jorda a year earlier. Gunn had also written about

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<sup>92</sup> Miller, Sir Joseph Holmes 'Bob', CTAE Diary, Alexander Turnbull Library, Wellington, New Zealand

<sup>93</sup> Kirkwood, Capt H. 'HMNZS Endeavour – Report of Proceedings to the NZNB on the Antarctic Voyage & Naval Operations in support of the British New Zealand Trans Antarctic & IGY Expedition, December 1956 – March 1957. (Note this title was revised for the 1957-1958 Report)

<sup>94</sup> Bernie Gunn had suggested this be done in his 'Interim Report' the previous summer.

<sup>95</sup> Miller, Sir Joseph Holmes 'Bob', 'CTAE Diary, Jan 14<sup>th</sup>, 1957, Helm-Miller, 'Antarctica', p.158

<sup>96</sup> Hillary, Edmund, 'Nothing Venture, Nothing Win' p.242

<sup>97</sup> Hillary, Sir Edmund, Oral History, NZAS, 2004

the Ferrar in his report on that flight, "This glacier offers the best access of any route seen to date. The approach lies from Hut Point across flat permanent sea ice;...the surface of this 15 miles wide glacier is of unbroken snow"<sup>98</sup>

On January 18<sup>th</sup>, with Bill Cranfield as pilot, they flew over the Skelton Glacier. This flight included Hillary, George Marsh, Richard Brooke, John Claydon and Bob Miller. They then made another flight up the Koettlitz Glacier and over the Skelton névé. Claydon and Hillary also made two more flights to examine the glacier in more detail. These reconnaissance flights confirmed at least the possibility of using the Skelton as the ascent/descent path. This reconnaissance flying took over ten hours in total<sup>99</sup>

On one occasion, as they were establishing depots at the head and foot of the Skelton, John Claydon along with Hillary and Brooke had a near catastrophe when attempting to land on the Skelton névé. What from the air appeared to be a smooth surface was in fact severe *sastrugi* and the first touchdown violently shook the Beaver, which, fortunately, held fast until Claydon could regain altitude.

Detailed ground reconnaissance using dog teams followed these flights. Finally, on February 9<sup>th</sup>, the dog teams led by Marsh and Ayres reached the Polar Plateau and reported that a route up the Skelton had been established.<sup>100</sup> They had found their path to the plateau, and, if the expedition plan held, and Antarctica softened its defences, it would be the path by which 'Bunny' Fuchs and his Sno-Cats would make their descent to their final destination at Scott Base, Ross Island.

On March 5<sup>th</sup>, 1957, Scott Base and Shackleton Base communicated and exchanged the information that each party was now settling into its respective home for the coming winter. Both the Weddell Sea and the Ross Sea parties could now focus on the next stage of their mission.<sup>101</sup>

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<sup>98</sup> Gunn, B.G., 'Interim Report of Observations of Possible Routes for the New Zealand Antarctic Expedition Dec 20, 1955 – Jan 7, 1956, Falla Papers, Canterbury Museum, Christchurch

<sup>99</sup> Helm-Miller, 'Antarctica', p.158

<sup>100</sup> Hillary, Edmund, 'Nothing Venture, Nothing Win,' p. 243

<sup>101</sup> Ibid

## AFTERWARD

The 'Heroic Age' is said to have ended with the death of Shackleton in 1922. However, Antarctica produced many heroes after that time – indeed the expeditions of Mawson, Ellsworth, and Byrd all had the trademarks of man's often desperate pursuit of the unknown. I would like to suggest that the 'Heroic Age' saw its last act played out when the Sno-Cats roared into Scott Base in McMurdo Sound on March 3, 1958 after 99 days on the ice. This event realised the dream of Shackleton to cross the Antarctic continent and brought together two of exploration's strongest personalities. Vivian 'Bunny' Fuchs and Sir Edmund Hillary, in completing their respective project missions, had delivered Antarctica from the age of exploration to the age of science.

Shackleton had referred to the crossing as the final "great main object of Antarctic journeyings".<sup>102</sup> Are we to say that those who accomplished this feat were not made of similar stuff as those explorer-scientists of forty years previously?

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<sup>102</sup> Shackleton, 'South', preface

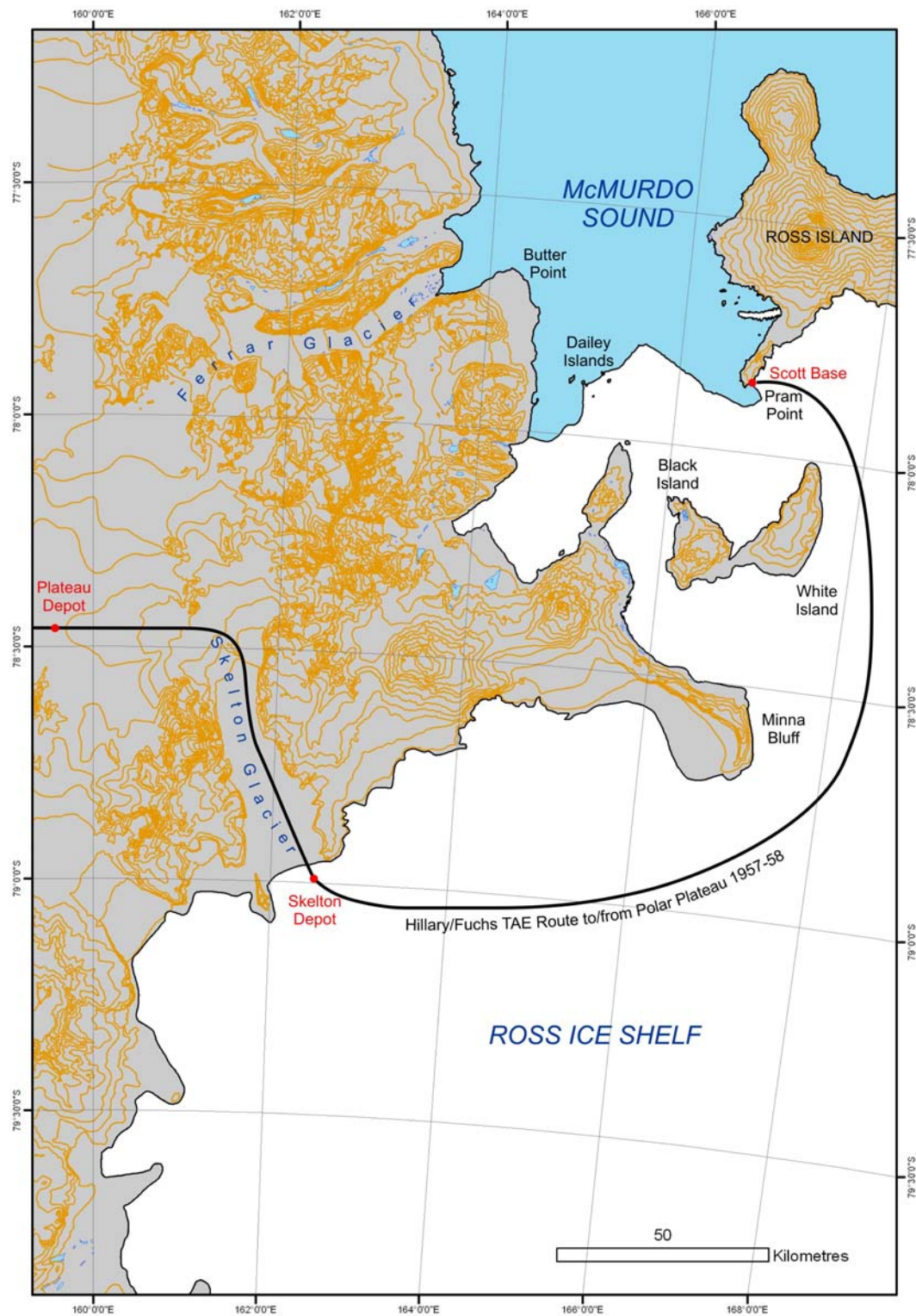
## APPENDICES

### Appendix I - Abbreviations

<b>BAS</b>	British Antarctic Survey
<b>CSAGI</b>	Comité Spécial de l'Année Géophysique
<b>DSIR</b>	Department of Scientific and Industrial Research
<b>FIDS</b>	Falkland Islands Dependencies Survey
<b>IGY</b>	International Geophysical Year
<b>IPY</b>	International Polar Year
<b>HMNZS</b>	Her Majesty's New Zealand Ship
<b>NZAS</b>	New Zealand Antarctic Society
<b>RGS</b>	Royal Geographic Society
<b>RNZAF</b>	Royal New Zealand Air Force
<b>RSC</b>	Ross Sea Committee
<b>TAE</b>	Trans-Antarctic Expedition
<b>UK</b>	United Kingdom
<b>USN</b>	United States Navy
<b>WWII</b>	World War II

## Appendix II – Map

### Fuchs / Hillary Tractor Route between Scott Base and Polar Plateau





### **Appendix III – Photos**

- 1. Artists impression of Scott Base, ‘New Zealand’s Antarctic Village’, as it will appear on the proposed site near Butter Point. (Canterbury Museum, Christchurch, New Zealand)**
- 2. Proposed Scott Base site taken from helicopter by Bernie Gunn in 1956 (Canterbury Museum, Christchurch, New Zealand)**
- 3. Randal Heke surveys the proposed Scott Base site from the closest possible distance to the site. Note the Ferrar GI moraine debris on far side of melt stream. Disadvantages of site – impossible to approach by surface means, no adjacent snow or ice for Base water supplies or for dogs; hillside unsuitable for vehicles and dog sledges; Ferrar GI route found to be impossible for vehicles or dog teams. (John Claydon)**
- 4. Gunn, Hatherton, Smith arrive by helicopter to inspect hillside near Butter Pt. below Ferrar Glacier, for suitability as site for Scott Base. Site was recommended as suitable, Ferrar Glacier as suitable for vehicles and dog teams, and adjacent ice suitable for aircraft operations. (J.Claydon)**
- 5. Proposed site – moraine “ No place For gardeners Sand and gravel dotted with boulders are not an average householder’s choice for a building site, but discovery of this wide, sheltered, ice-free, and almost level ledge assures New Zealand’s Antarctic planners of a better than average location for the party’s headquarters. – The site actually proved to be unsuitable. (Canterbury Museum, Christchurch, New Zealand)**
- 6. Hillary, Fuchs, Dufek at Scott-Amundsen Station – South Pole (Canterbury Museum, Christchurch, New Zealand)**
- 7. Camp on Skelton Glacier in high wind & drifting snow (Canterbury Museum, Christchurch, New Zealand)**
- 8. Kiwi Team – l to r: Bob Miller, John Claydon, Sir Edmund Hillary, George Lowe and Gordon Haslop (Canterbury Museum, Christchurch, New Zealand)**

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- 3. Randal Heke surveys the proposed Scott Base site from the closest possible distance to the site. Note the Ferrar Glacier moraine debris on far side of melt stream. Disadvantages of site – impossible to approach by surface means, no adjacent snow or ice for Base water supplies or for dogs; hillside unsuitable for vehicles and dog sledges; Ferrar Gl route found to be impossible for vehicles or dog teams. (John Claydon)**
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5. **Proposed Butter Point site – “ No place For Gardeners: Sand and gravel dotted with boulders are not an average householder’s choice for a building site, but discovery of this wide, sheltered, ice-free, and almost level ledge assures New Zealand’s Antarctic planners of a better than average location for the party’s headquarters”. – The site proved to be unsuitable. (Canterbury Museum, Christchurch, New Zealand)**

**7. Camp on Skelton Glacier in high wind & drifting snow  
(Canterbury Museum, Christchurch, New Zealand)**

**8. Kiwi Team – l to r: Bob Miller, John Claydon, Sir Edmund Hillary, George  
Lowe and Gordon Haslop (Canterbury Museum, Christchurch, New  
Zealand)**

#### **Appendix IV – The Plan**

- 1. Initial plan for the TAE drafted by Vivian Fuchs in 1948 (Peter Fuchs – SPRI)**

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